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SWEMP/SWEPIC:
Review of a nine year adventure

U.S. Department of the Interior
U.S. Geological Survey

Dr. Kathryn Thomas
Southwest Biological Science Center
September 6, 2007 Arizona Invasive Species Council

Southwest Biological Science Center

Home Pages | About SBSC | News & Info | Research | Products

Southwest Exotic Plant Information Clearinghouse (SWEPIC)

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nbii National Biological Information Infrastructure

[Home] [Weed Species] [Weed Lists] [SWEMP] [APRS] [AZ-WIP] [Team] [Site Index]

Centaurea solstitialis

The **Southwest Exotic Plant Information Clearinghouse** was developed a cooperative effort between the U.S. Geological Survey, the National Park Service, and Northern Arizona University. The site is no longer maintained; however, you will find links to the last update of the Southwest Exotic Plant Mapping Program (2007), descriptions and findings of the Arizona Wildlands Invasive Plant Working Group (2005), and the most recent version of the Alien Plant Ranking System (7.1).

Weed Species	**Weed species profiles**
Weed Lists	**Noxious and other weed lists for the Southwest**
SWEMP	**The Southwest Exotic Plant Mapping Program**
APRS	**The Alien Plant Ranking System**
AZ-WIP	**Arizona Wildlands Invasive Plants**

Please contact Kathryn Thomas regarding any questions.

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Southwest Exotic Plant Information Clearinghouse (SWEPIC)
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[Home] [Weed Species] [Weed Lists] [SWEMP] [APRS] [AZ-WIP] [Team] [Site Index]
Southwest Exotic Mapping Program
The Southwest Exotic Mapping Program (SWEMP) was a USGS Southwest Biological Sciences Center program that coordinated the semi-annual compilation of a regional database of non-native invasive plant distributions for Arizona and adjacent areas of the southwest. The program existed from the late 1990's until 2007 and was supported by the funding and collaboration of federal, state, tribal, and local funders and collaborators.
Arizona Cooperative Weed Management Area Map 2007
This is version 3 of the cooperative weed management area boundaries based on information provided to SWEMP by June 2007. It is in .zip format (Containing a .jpg file). 2.5 MB
SWEMP2007 Regional Database
The 2007 update contains 62,000 entries for 221 invasive, non-native species. It is in .zip format (Containing a .mdb file [MS Access]). 2.9 MB
SWEMP2007 metadata
The metadata provides information about all the fields in the SWEMP2007 Regional Database. It is in .zip format (Containing a .txt file). 16 KB
Coming soon – Watch this site
Maps of Select Species for Arizona from the SWEMP2007 Regional Database
Please contact Kathryn Thomas regarding any questions.

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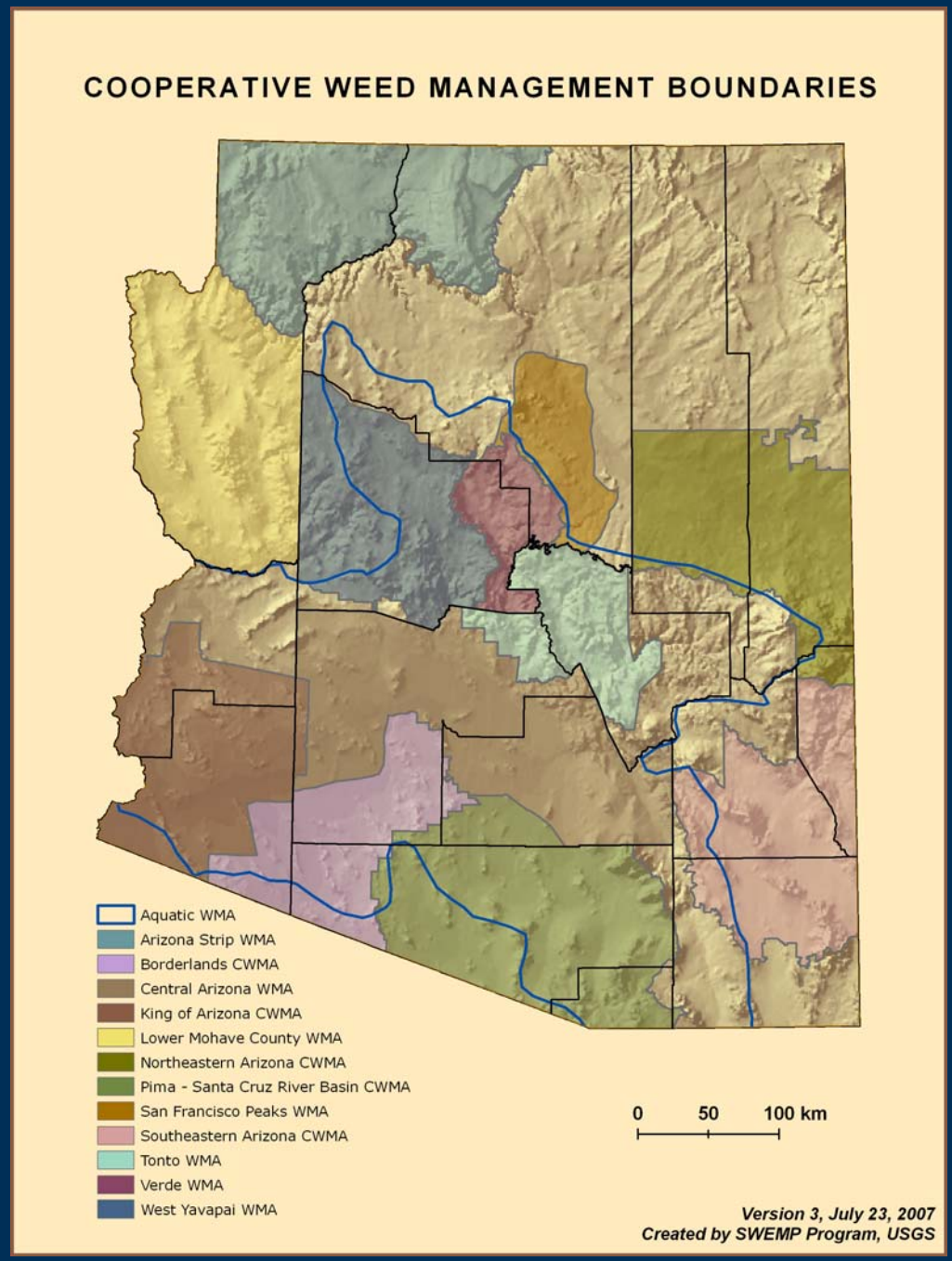
Downloads include a map of the current boundaries of Arizona CWMA's



USGS

- USGS open-file-report
- 68 Arizona species as reported in SWEMP 07
- Download from SWEMP site

Acroptilon repens

Synonym: *Centaurea repens*
Common Name: Russian knapweed, hardheads
USDA Plant Code: ACRE3
Family: Asteraceae

Arizona legal listing: Prohibited, Regulated

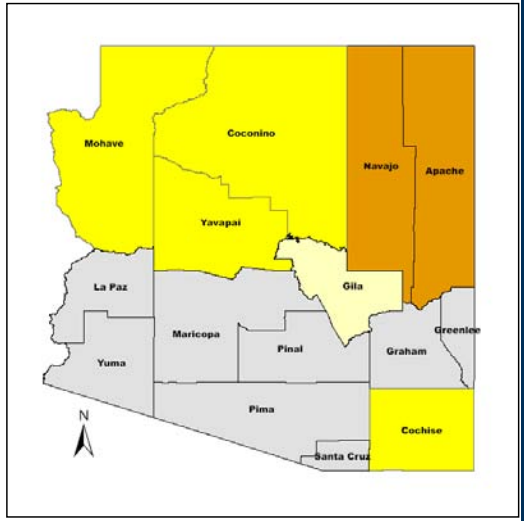
AZ-WIPWG category: High

Cal-IPC category: Moderate

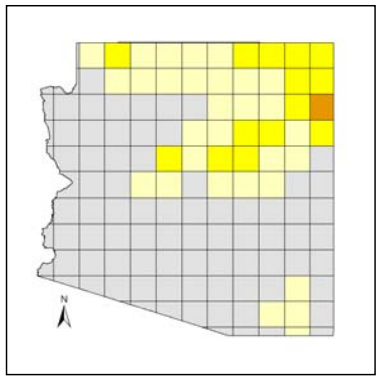
NatureServe ranking: High

Map legend:

- No records
- 1-10 records
- 11-100 records
- 101-1000 records
- >1000 records



SWEMP occurrence records by County



SWEMP occurrence records by 7.5" Topographic Quadrangles

SWEMP occurrence records by Weed Management Area

The early years of SWEMP

- GPS not widely used
- Internet use not widespread or well understood
- No standards for collection and sampling
- ‘Why collect data instead of kill weeds”
- No weed management areas, no state council, no Southwest Vegetation Management Association
- No early detection and rapid response system
- Development funds available from NBII and operational funds from Forest Service and BLM

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The current climate

- GPS widely used, handheld data collection devices more common
- Internet use widespread, many new features
- NAWMA standards for collection and sampling
- More consensus on the value of systematic data collection
- State has 12 geographic weed management areas covering approximately 2/3 of land, AISC, SWVMA
- No early detection and rapid response system
- Federal agencies (BLM, FS) developing own agency database
- NBII funds not for operational, but have supported federal-state multi-agency collaborations

USGS

The Data Pipeline

State Agencies

Tribes

Federal Agencies

County Agencies

NGO's

Interested Public

City governments

SWEMP

NIISS

CWMA

Local

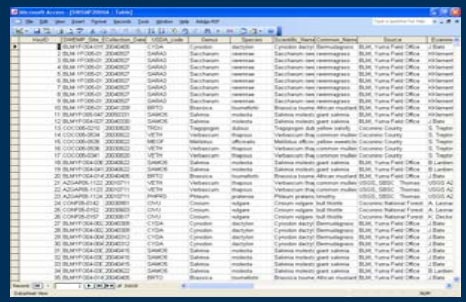
Regional

National

USGS

The three data essentials

Data collection



Data management

Data delivery

USGS

The Data Pipeline: Data contributors

- State agencies
- Tribes
- Federal agencies
- County agencies
- NGO's
- Interested public
- City governments
- Weed management areas

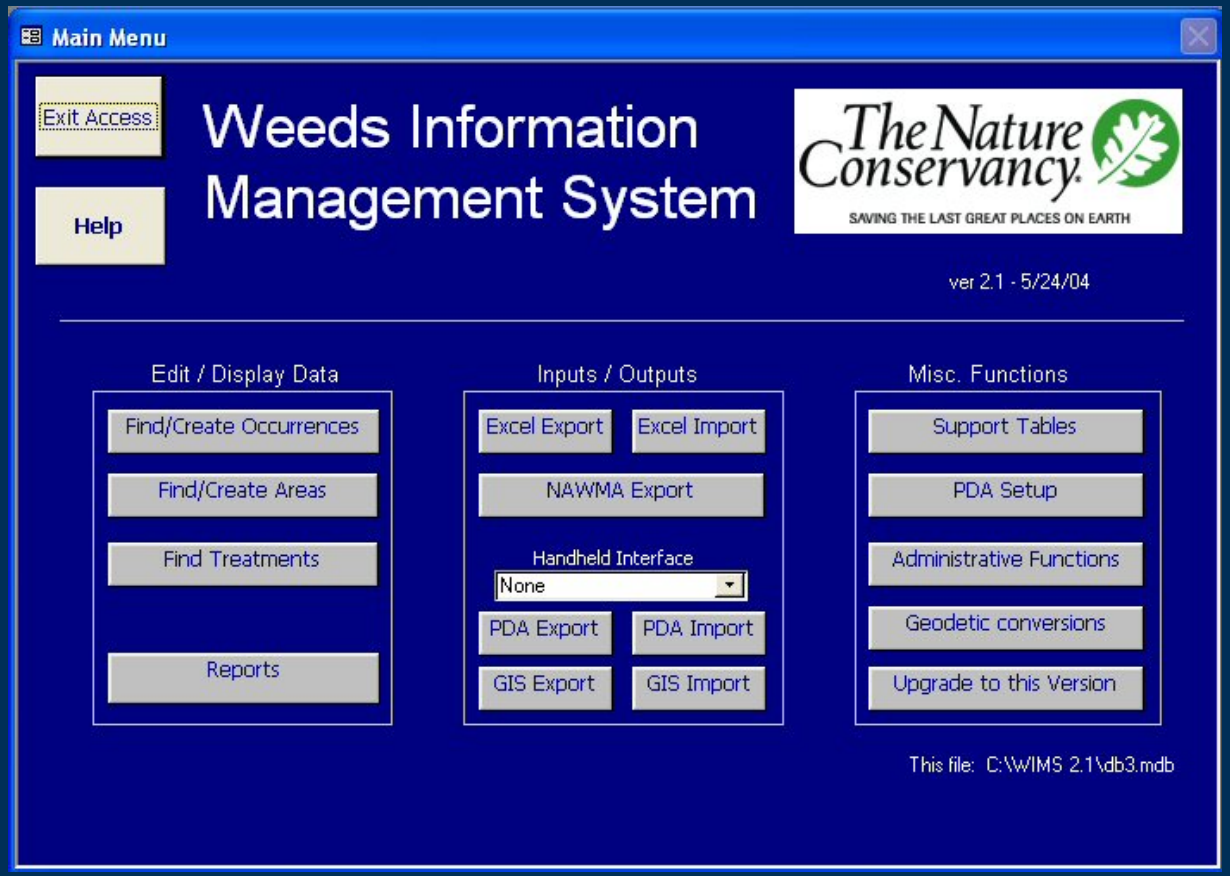
Data Collection

Data management

Data delivery

USGS

Weeds Information Management System



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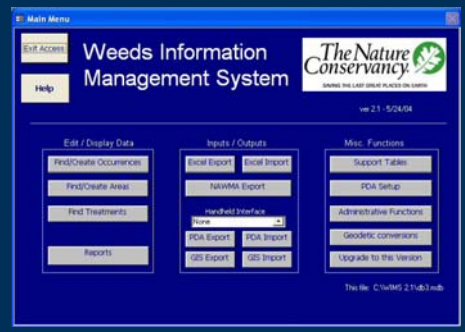
WIMS



Enter New Data manually

Import Data:
- Excel
- Shapefiles
- PDA file

Export Data:
- Excel spreadsheet
- SWEMP output
- Reports

GIS Export to create shapefiles, to be opened in ArcMap

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The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

TNC's Weed Information Management System (WIMS)
User's Manual

ISI

The Nature Conservancy's Oregon & Idaho Field Offices, NW Division, and Invasive Species Initiative
Version 2.1b

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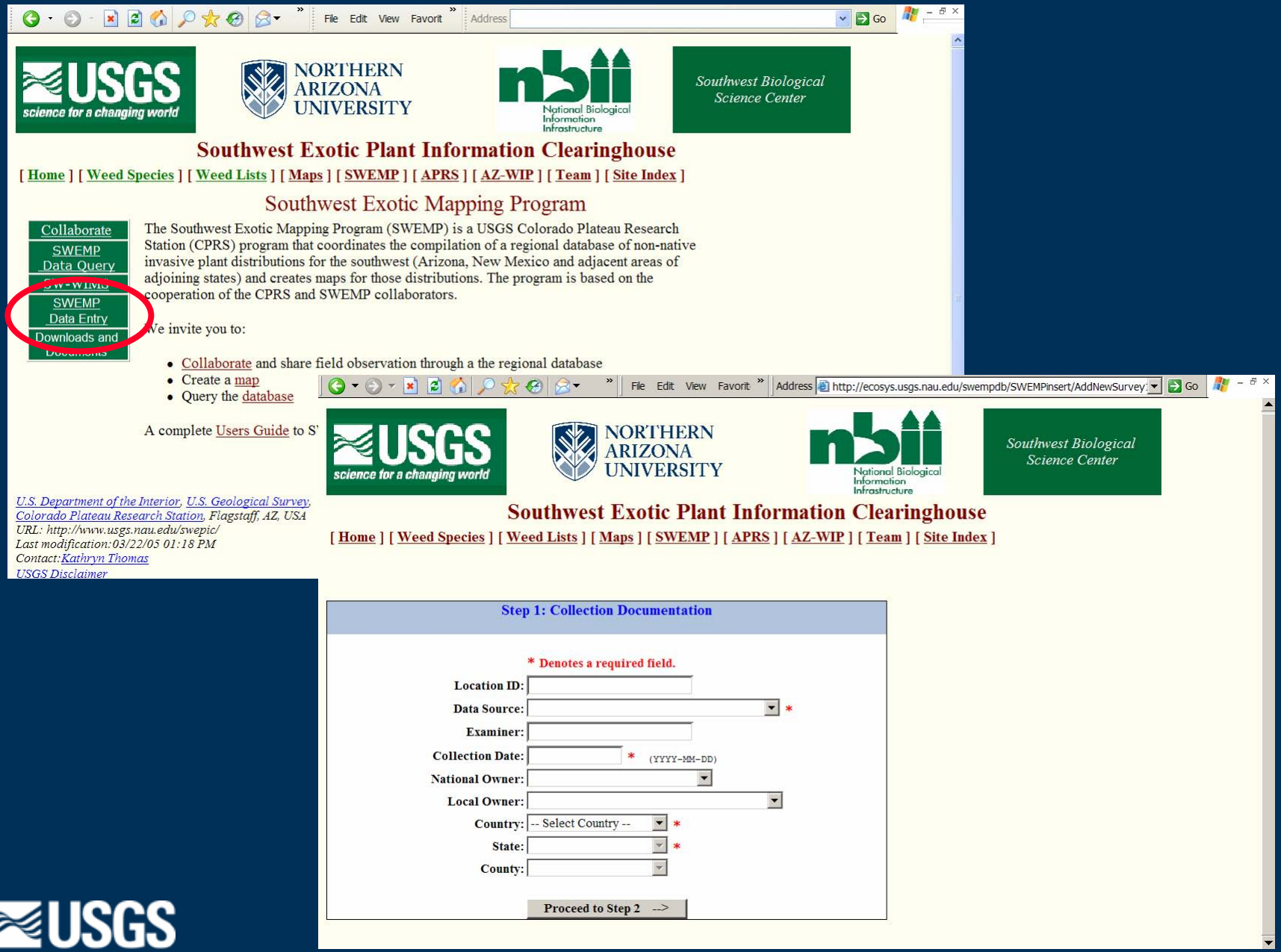
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Southwest Exotic Mapping Program
Collaborate
SWEMP Data Query
SWEMP Data Entry
Downloads and
The Southwest Exotic Mapping Program (SWEMP) is a USGS Colorado Plateau Research Station (CPRS) program that coordinates the compilation of a regional database of non-native invasive plant distributions for the southwest (Arizona, New Mexico and adjacent areas of adjoining states) and creates maps for those distributions. The program is based on the cooperation of the CPRS and SWEMP collaborators.
We invite you to:
Collaborate and share field observation through a the regional database
Create a map
Query the database
A complete Users Guide to S'
Address http://ecosys.usgs.nau.edu/swempdb/SWEMPinsert/AddNewSurvey:
U.S. Department of the Interior, U.S. Geological Survey,
Colorado Plateau Research Station, Flagstaff, AZ, USA
URL: http://www.usgs.nau.edu/swepic/
Last modification:03/22/05 01:18 PM
Contact:Kathryn Thomas
USGS Disclaimer
Step 1: Collection Documentation
* Denotes a required field.
Location ID:
Data Source:
Examiner:
Collection Date:
(YYYY-MM-DD)
National Owner:
Local Owner:
Country:
-- Select Country --
State:
County:
Proceed to Step 2 -->

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The Data Pipeline

State Agencies

Tribes

Federal Agencies

County Agencies

NGO's

Interested Public

City governments

SWEMP

NIISS

CWMA

Local ⟷ Regional ⟷ National

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Some steps in SWEMP data processing

- Data compilation
  - Standardization
  - Completeness
  - Location accuracy
  - SWEMP value added information
  - Degrade accuracy private lands
  - Transform line and polygon data to points

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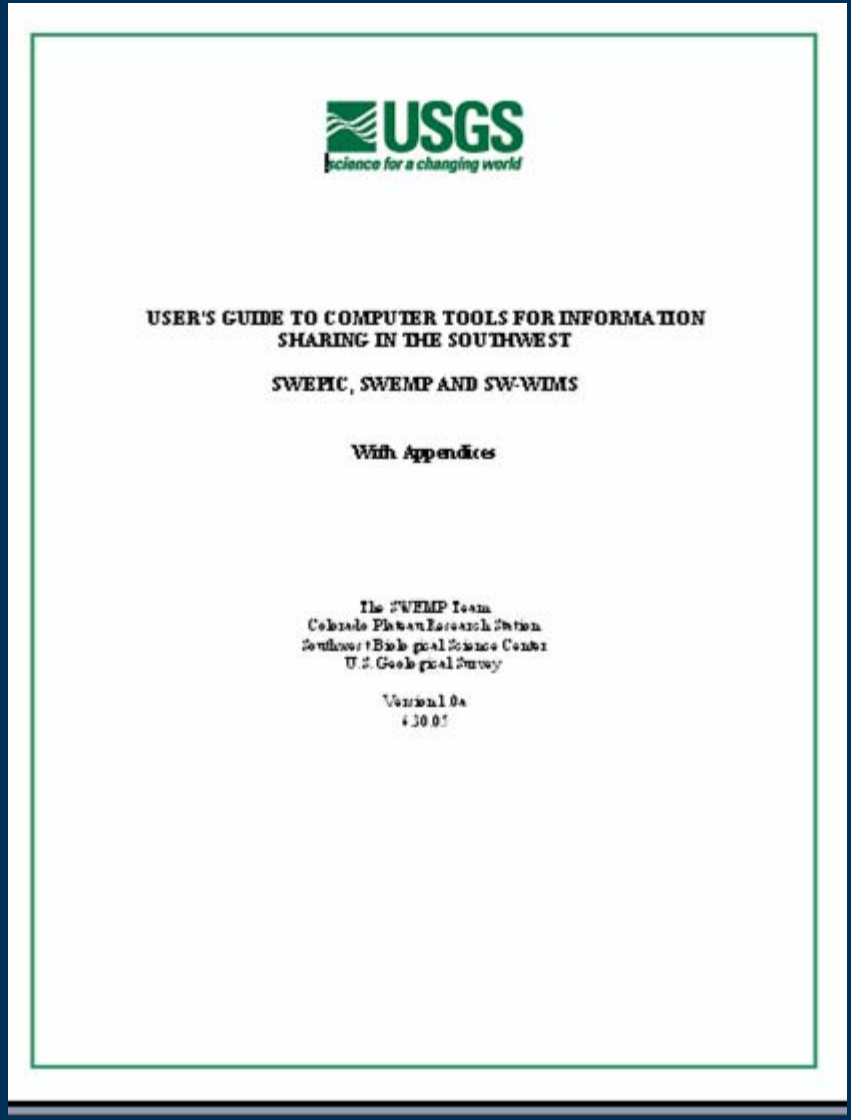

USER'S GUIDE TO COMPUTER TOOLS FOR INFORMATION SHARING IN THE SOUTHWEST

SWEPIC, SWEMP AND SW-WIMS

With Appendices

The SWEMP Team
Colorado Plateau Research Station
Southwest Biological Science Center
U.S. Geological Survey

Version 1.0a
4.30.05

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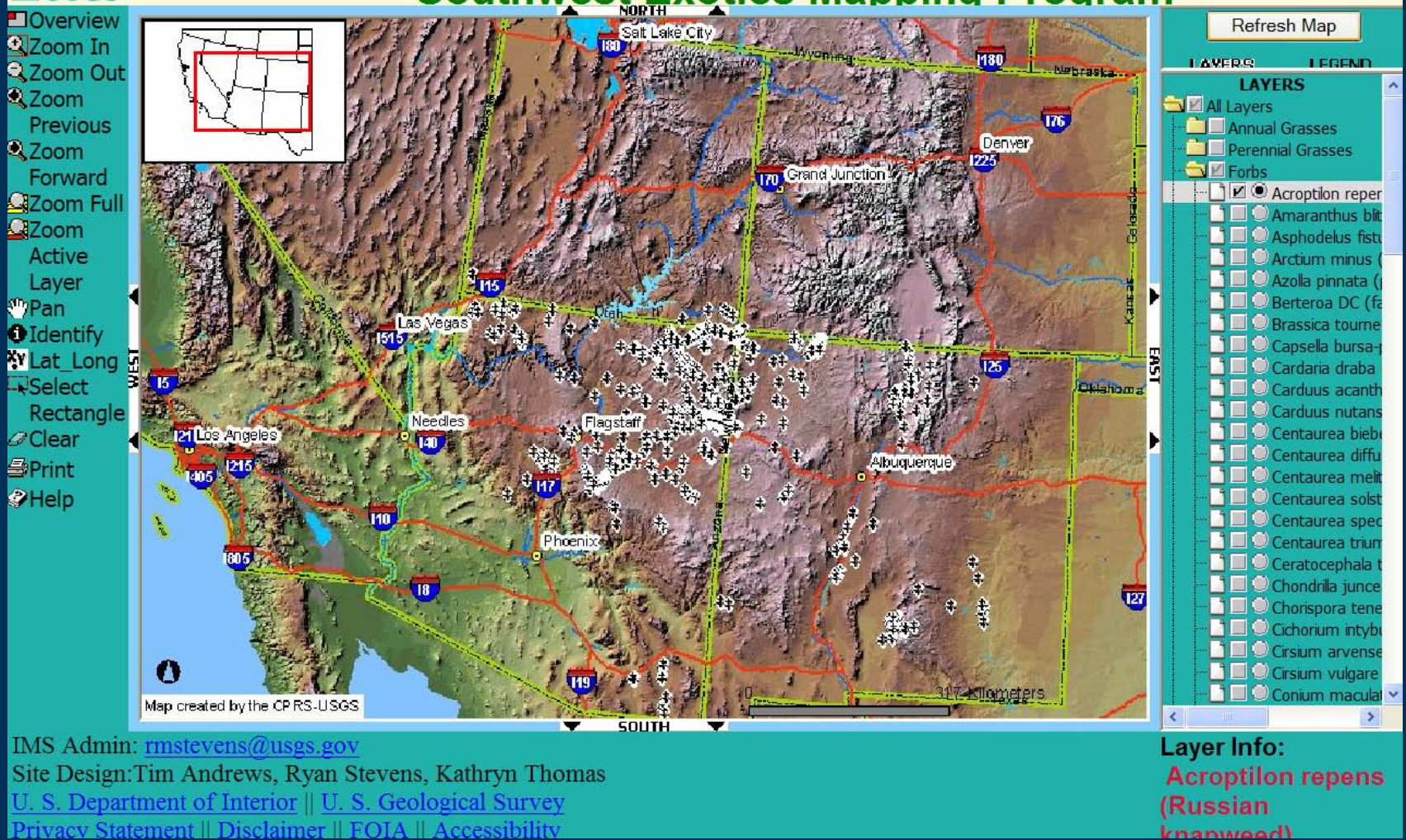
Southwest Exotics Mapping Program



IMS Admin: rmstevens@usgs.gov
Site Design:Tim Andrews, Ryan Stevens, Kathryn Thomas

Layer Info:
Acroptilon repens (Russian knapweed)

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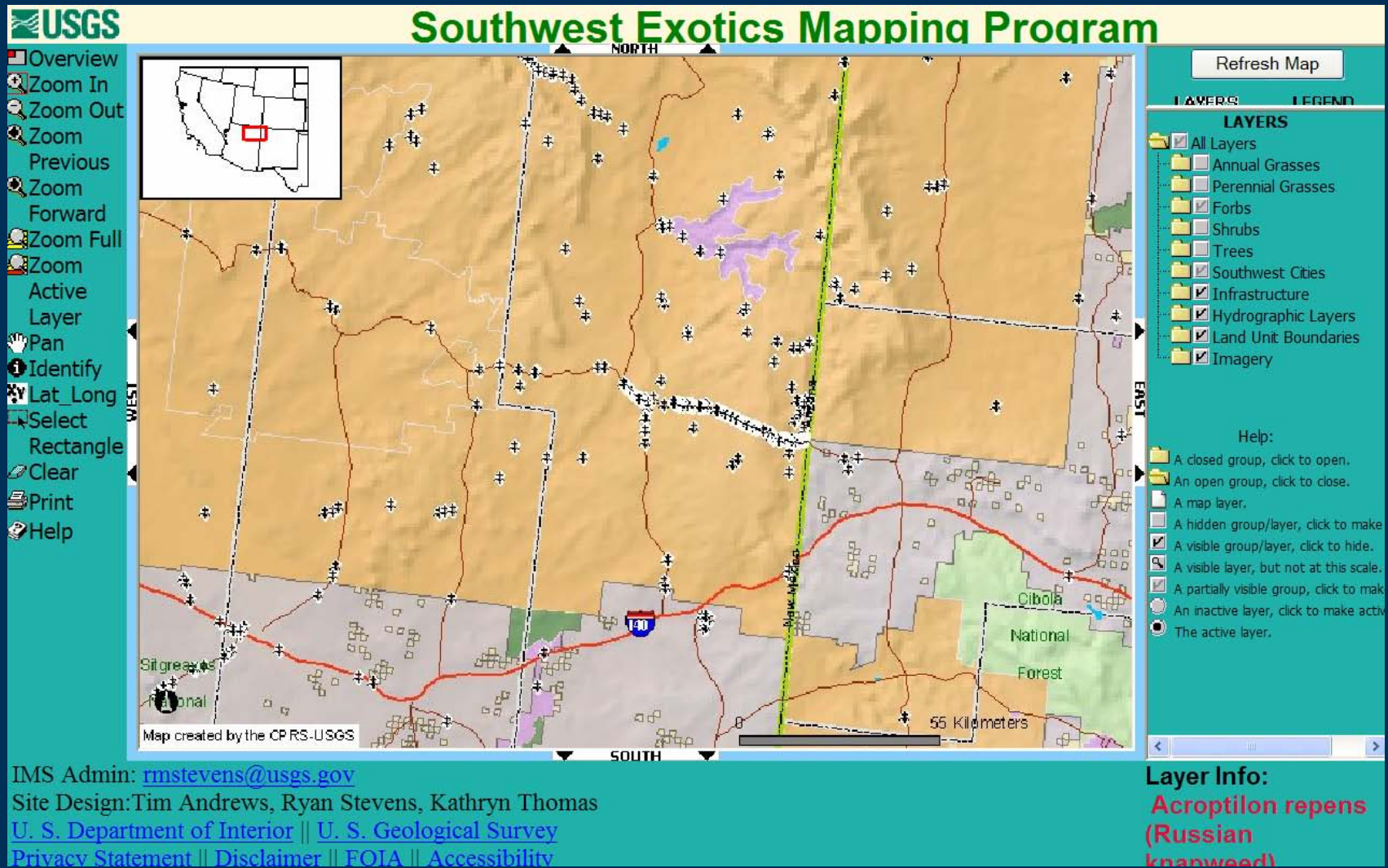
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Southwest Exotics Mapping Program
Overview
Zoom In
Zoom Out
Zoom Previous
Zoom Forward
Zoom Full
Zoom Active Layer
Pan
Identify
Lat_Long
Select Rectangle
Clear
Print
Help
NORTH
WEST
EAST
SOUTH
Map created by the CPRS-USGS
Cibola National Forest
55 Kilometers
Refresh Map
LAYERS
LEGEND
LAYERS
All Layers
Annual Grasses
Perennial Grasses
Forbs
Shrubs
Trees
Southwest Cities
Infrastructure
Hydrographic Layers
Land Unit Boundaries
Imagery
Help:
A closed group, click to open.
An open group, click to close.
A map layer.
A hidden group/layer, click to make
A visible group/layer, click to hide.
A visible layer, but not at this scale.
A partially visible group, click to mak
An inactive layer, click to make activ
The active layer.
IMS Admin: rmstevens@usgs.gov
Site Design:Tim Andrews, Ryan Stevens, Kathryn Thomas
U. S. Department of Interior || U. S. Geological Survey
Privacy Statement || Disclaimer || FOIA || Accessibility
Layer Info:
Acroptilon repens (Russian knapweed)

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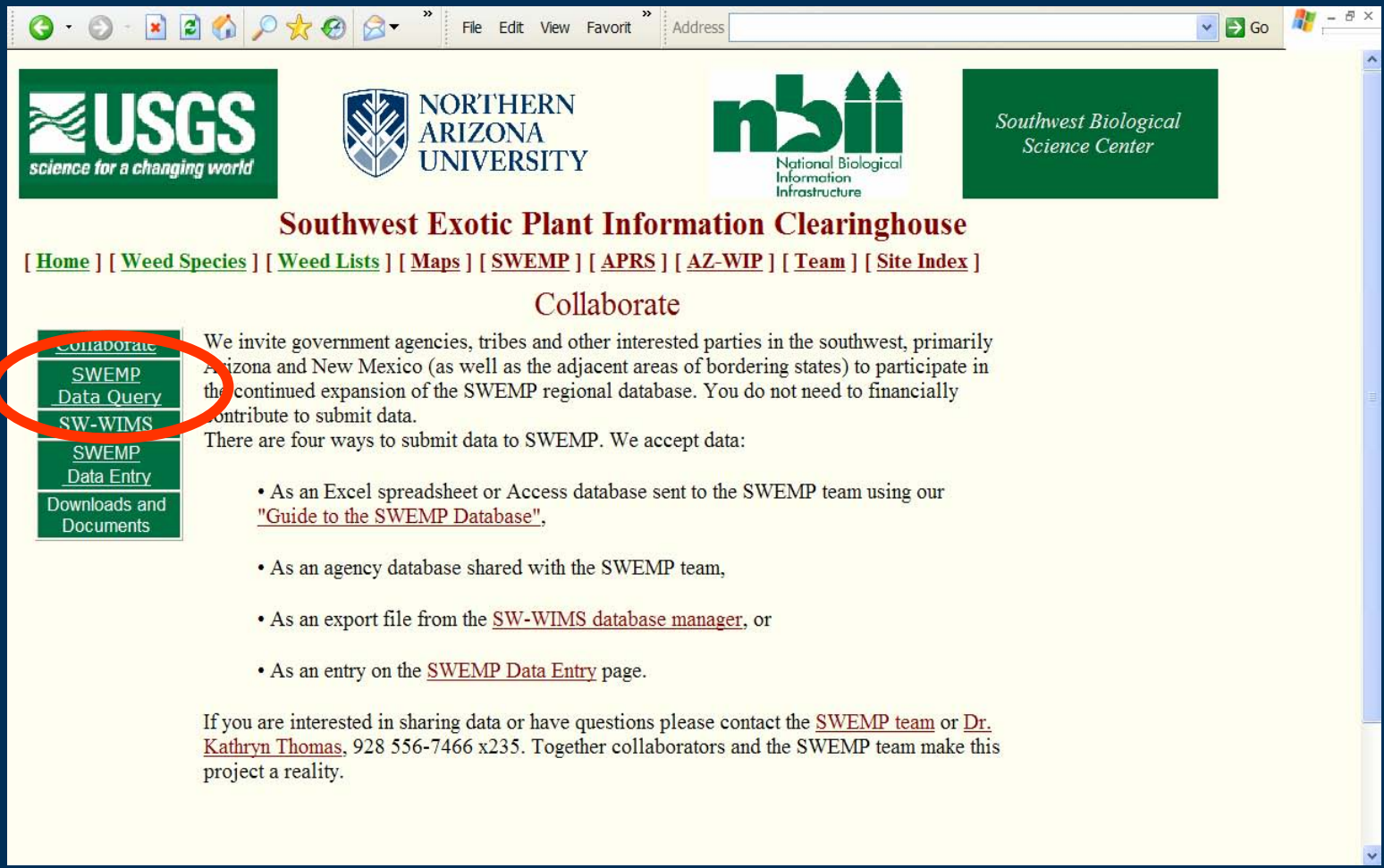
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Collaborate
Collaborate
SWEMP Data Query
SW-WIMS
SWEMP Data Entry
Downloads and Documents
We invite government agencies, tribes and other interested parties in the southwest, primarily Arizona and New Mexico (as well as the adjacent areas of bordering states) to participate in the continued expansion of the SWEMP regional database. You do not need to financially contribute to submit data.
There are four ways to submit data to SWEMP. We accept data:
• As an Excel spreadsheet or Access database sent to the SWEMP team using our "Guide to the SWEMP Database",
• As an agency database shared with the SWEMP team,
• As an export file from the SW-WIMS database manager, or
• As an entry on the SWEMP Data Entry page.
If you are interested in sharing data or have questions please contact the SWEMP team or Dr. Kathryn Thomas, 928 556-7466 x235. Together collaborators and the SWEMP team make this project a reality.

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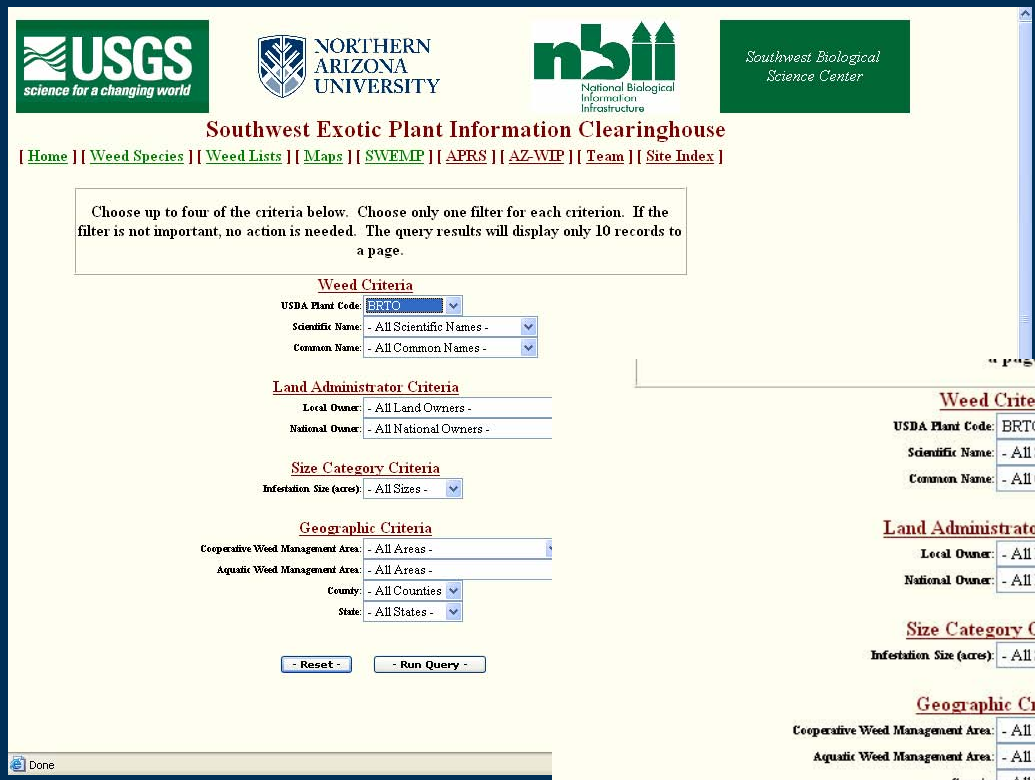

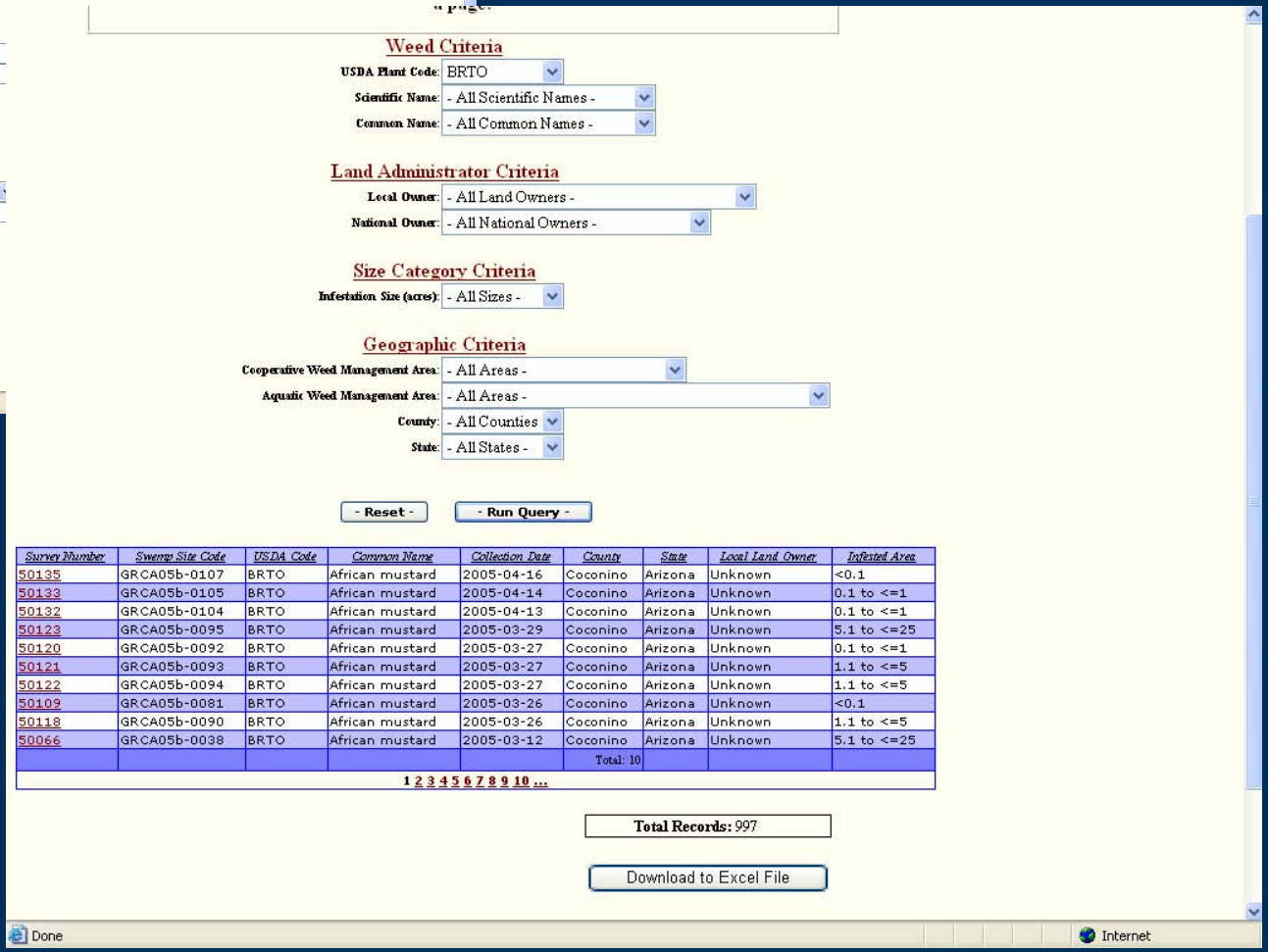

Survey Number	Swemp Site Code	USDA Code	Common Name	Collection Date	County	State	Local Land Owner	Infested Area
50135	GRCA05b-0107	BRTO	African mustard	2005-04-16	Coconino	Arizona	Unknown	<0.1
50133	GRCA05b-0105	BRTO	African mustard	2005-04-14	Coconino	Arizona	Unknown	0.1 to <=1
50132	GRCA05b-0104	BRTO	African mustard	2005-04-13	Coconino	Arizona	Unknown	0.1 to <=1
50123	GRCA05b-0095	BRTO	African mustard	2005-03-29	Coconino	Arizona	Unknown	5.1 to <=25
50120	GRCA05b-0092	BRTO	African mustard	2005-03-27	Coconino	Arizona	Unknown	0.1 to <=1
50121	GRCA05b-0093	BRTO	African mustard	2005-03-27	Coconino	Arizona	Unknown	1.1 to <=5
50122	GRCA05b-0094	BRTO	African mustard	2005-03-27	Coconino	Arizona	Unknown	1.1 to <=5
50109	GRCA05b-0081	BRTO	African mustard	2005-03-26	Coconino	Arizona	Unknown	<0.1
50118	GRCA05b-0090	BRTO	African mustard	2005-03-26	Coconino	Arizona	Unknown	1.1 to <=5
50066	GRCA05b-0038	BRTO	African mustard	2005-03-12	Coconino	Arizona	Unknown	5.1 to <=25
					Total: 10			

1 2 3 4 5 6 7 8 9 10 ...

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Southwest Exotic Plant Information Clearinghouse

Centaurea solstitialis

The Southwest Exotic Plant Information Clearinghouse is a cooperative effort among the U.S. Geological Survey, the National Park Service and Northern Arizona University to organize comprehensive information on exotic plant species in the southwest on one web location. SWEPIC serves to help all people and organizations committed to protecting the ecological and economic values of southwest resources from degradation from harmful non-native weeds. The goal of SWEPIC is to provide reliable and organized information on the distribution and ecology of these weeds in the southwest, with an emphasis on forests, rangelands, and other natural areas. Please contact us if you have information or comments that should be included in SWEPIC (SWEPIC Team).

Weed Species	Weed species profiles
Weed Lists	Noxious and other weed lists for the Southwest
Maps	Maps of southwest non-native invasive plants
SWEMP	The Southwest Exotic Plant Mapping Program
APRS	The Alien Plant Ranking System
AZ-WIP	Arizona Wildlands Invasive Plants

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Southwest Exotic Plant Information Clearinghouse

Acroptilon repens

Synonym: Centaurea repens

Common Name: Russian knapweed, hardheads

USDA Plant Code: ACRE3

Family: Asteraceae

Legal listings: Arizona Colorado New Mexico Utah California Nevada

Cal-IPC California Invasive Plant Inventory **Category: Moderate**

AZ-WIPG **Category: High**

View Plant Assessment

NatureServe Ranking:

High/Medium

Alien Plant Ranking System **Locations:**

Colorado State

Grand Canyon National Park

More web information:

US Forest Service Fire Effects Information

PLANTS database

Encycloweedia

USGS

The Data Pipeline

State Agencies

Tribes

Federal Agencies

County Agencies

NGO's

Interested Public

City governments

SWEMP

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CWMA

Local ⟷ Regional ⟷ National

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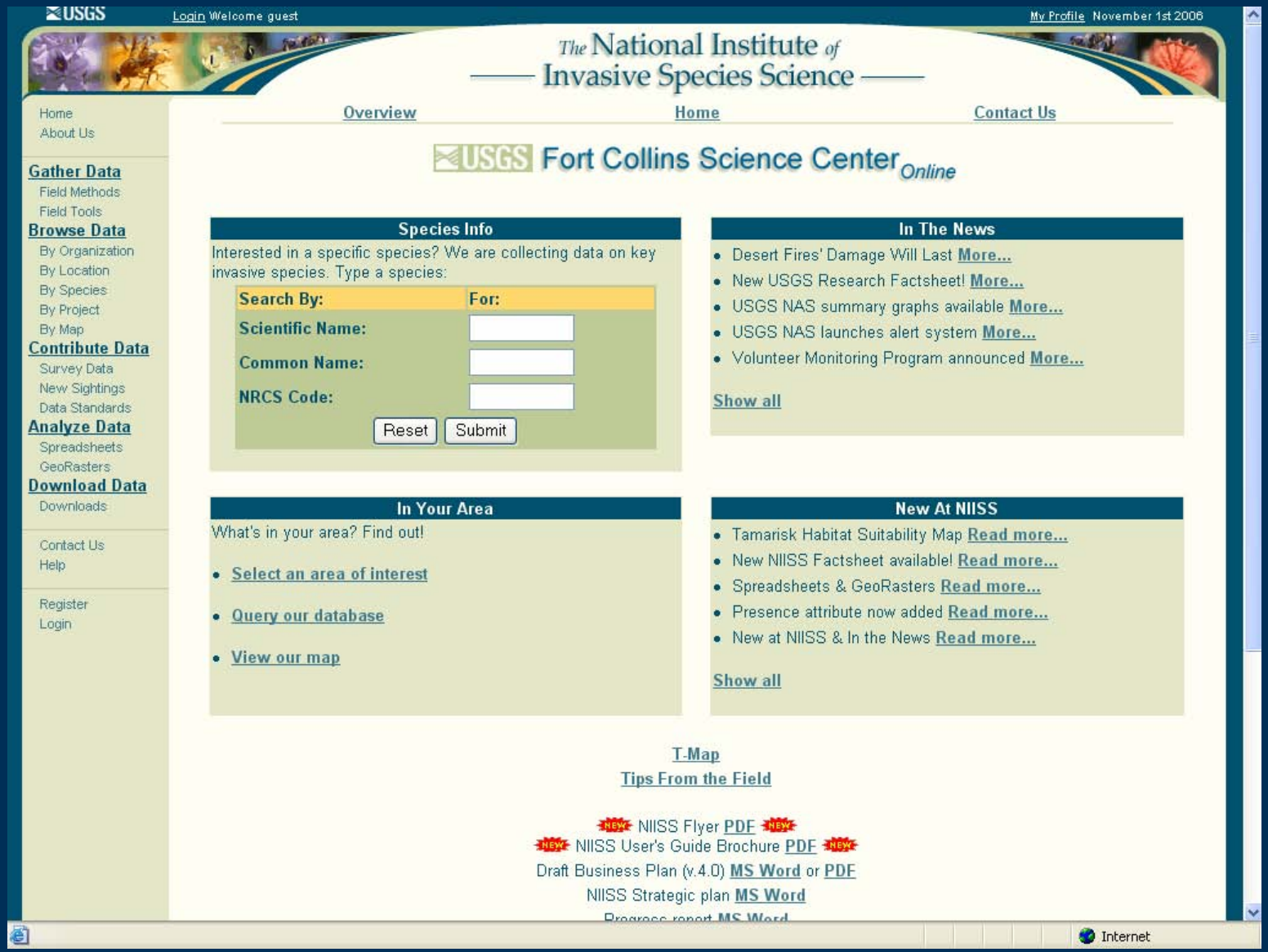
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The National Institute of Invasive Species Science
Overview
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Home
About Us
Gather Data
Field Methods
Field Tools
Browse Data
By Organization
By Location
By Species
By Project
By Map
Contribute Data
Survey Data
New Sightings
Data Standards
Analyze Data
Spreadsheets
GeoRasters
Download Data
Downloads
Contact Us
Help
Register
Login
USGS Fort Collins Science Center Online
Species Info
Interested in a specific species? We are collecting data on key invasive species. Type a species:
Search By:
For:
Scientific Name:
Common Name:
NRCS Code:
Reset
Submit
In The News
Desert Fires' Damage Will Last More...
New USGS Research Factsheet! More...
USGS NAS summary graphs available More...
USGS NAS launches alert system More...
Volunteer Monitoring Program announced More...
Show all
In Your Area
What's in your area? Find out!
Select an area of interest
Query our database
View our map
New At NIISS
Tamarisk Habitat Suitability Map Read more...
New NIISS Factsheet available! Read more...
Spreadsheets & GeoRasters Read more...
Presence attribute now added Read more...
New at NIISS & In the News Read more...
Show all
T-Map
Tips From the Field
NEW NIISS Flyer PDF NEW
NEW NIISS User's Guide Brochure PDF NEW
Draft Business Plan (v.4.0) MS Word or PDF
NIISS Strategic plan MS Word
Progress report MS Word
Internet

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NAS - Nonindigenous Aquatic Species

NAS Program Home | News | Alert System | Database & Queries | General Taxa Information | Links to Other Resources

Nonindigenous Aquatic Species

Welcome to the **Nonindigenous Aquatic Species** (NAS) information resource for the United States Geological Survey. Located at the Center for Aquatic Resource Studies, this site has been established as a central repository for accurate and spatially referenced biogeographic accounts of nonindigenous aquatic species.

Through the links below you can obtain information, maps, or issue queries to the NAS database regarding different nonindigenous aquatic species.

Vertebrates


Amphibians


Reptiles


Fishes


Mammals

Invertebrates


Tunicates


Bryozoans


Sponges

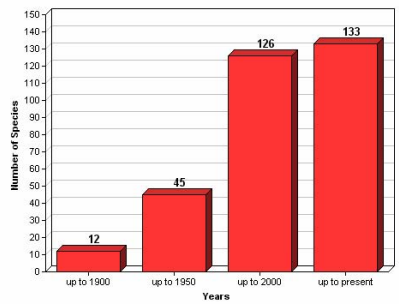

Coelenterates

state from the list below to generate graphs, then click on a graph to see the data.

Arizona | Create Graphs

USGS

Introduced Species in AZ



(graph created: 9/5/2007 by the United States Geological Survey)

up until the last year listed.

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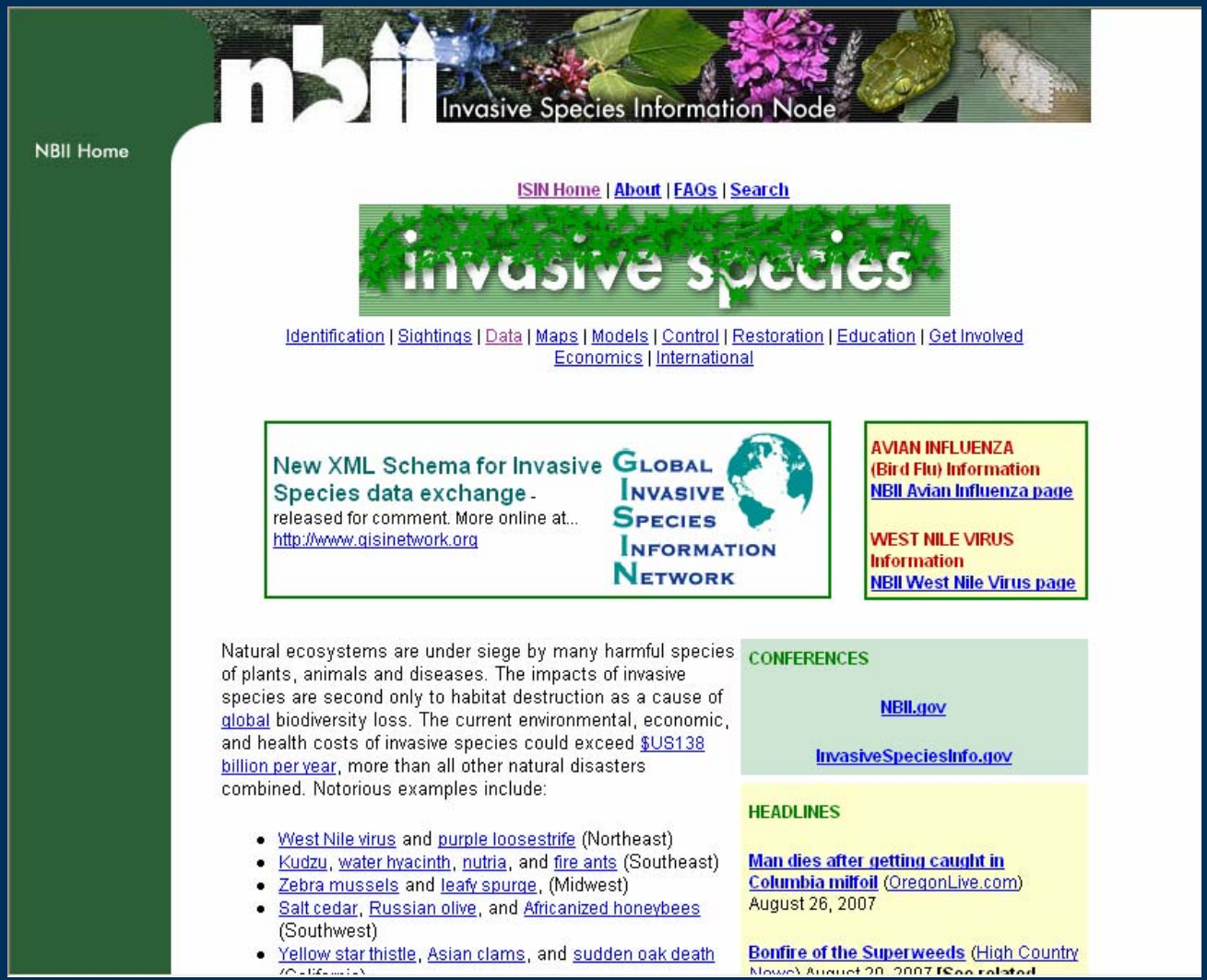
Origins of Species Introduced into AZ

This graph shows the percentage

USGS


Invasive Species Information Node
NBII Home
ISIN Home | About | FAQs | Search
invasive species
Identification | Sightings | Data | Maps | Models | Control | Restoration | Education | Get Involved
Economics | International
New XML Schema for Invasive Species data exchange -
released for comment. More online at...
http://www.gisinetwork.org
GLOBAL INVASIVE SPECIES INFORMATION NETWORK
AVIAN INFLUENZA
(Bird Flu) Information
NBII Avian Influenza page
WEST NILE VIRUS
Information
NBII West Nile Virus page
Natural ecosystems are under siege by many harmful species of plants, animals and diseases. The impacts of invasive species are second only to habitat destruction as a cause of global biodiversity loss. The current environmental, economic, and health costs of invasive species could exceed $US138 billion per year, more than all other natural disasters combined. Notorious examples include:
West Nile virus and purple loosestrife (Northeast)
Kudzu, water hyacinth, nutria, and fire ants (Southeast)
Zebra mussels and leafy spurge, (Midwest)
Salt cedar, Russian olive, and Africanized honeybees (Southwest)
Yellow star thistle, Asian clams, and sudden oak death
CONFERENCES
NBII.gov
InvasiveSpeciesInfo.gov
HEADLINES
Man dies after getting caught in Columbia milfoil (OregonLive.com)
August 26, 2007
Bonfire of the Superweeds (High Country

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USGS Research

- Cheatgrass – salt sensitivity, soil nutrient content and invasivity
- Saltcedar contribution to bird habitat
- Cowbird parasitism
- Impacts and management of bufflegrass
- Invasive plant sampling methods
- Invasive species and fire
- Modeling of future invasions and landscape vulnerability
- Risk assessments

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U.S. Geological Survey
Open-File Report 2007–1085
version 1.0

A *Dreissena* Risk Assessment for the Colorado River Ecosystem

By Theodore A. Kennedy

2007

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USGS in Arizona

- Flagstaff Science Center
- Colorado Plateau Research Station – NAU
- Grand Canyon Research & Monitoring
- Tucson Science Center
- Sonoran Desert Research Station – UofA
- National Phenology Network - UofA

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If I were starting over again!

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Lessons learned: Management

- Adequate staff
  - Project leader
  - Outreach coordinator
  - Database administrator
  - Web/IT technician
- Implement a steering committee immediately
- Prepare an SOP up-front and review and revise regularly
- Do not try to develop beyond your operational resources
- Have a cyberinfrastructure adequate for your needs

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Lessons learned: Data flow

- The pathway for data submittal will be different depending upon the type of submitter (federal, citizen, state). Don’t duplicate resources for data management being developed elsewhere.
- Perennial issues must be dealt with upfront: data privacy, location privacy, taxonomic accuracy, who maintains what data, how to handle absence data, the size of the ‘reporting’ unit
- The typical data collector needs education and coordination on how to best use GPS, digital cameras, web sites to identify and map invasive species

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New technologies

- Collaborative web sites (Wiki)
- Web map protocols (KML)
- Development in data gathering technology – smart phones, gps/data linkages, digital cameras

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Southeast EPPC - Early Detection and Distribution Mapping System - Windows Internet Explorer

http://www.se-eppc.org/eddMapS/google/index.cfm?sub=3039&lat=31.37686&long=-83.44983&zoom=14

SnagIt

iGoogle | Southeast EPPC - Early ...

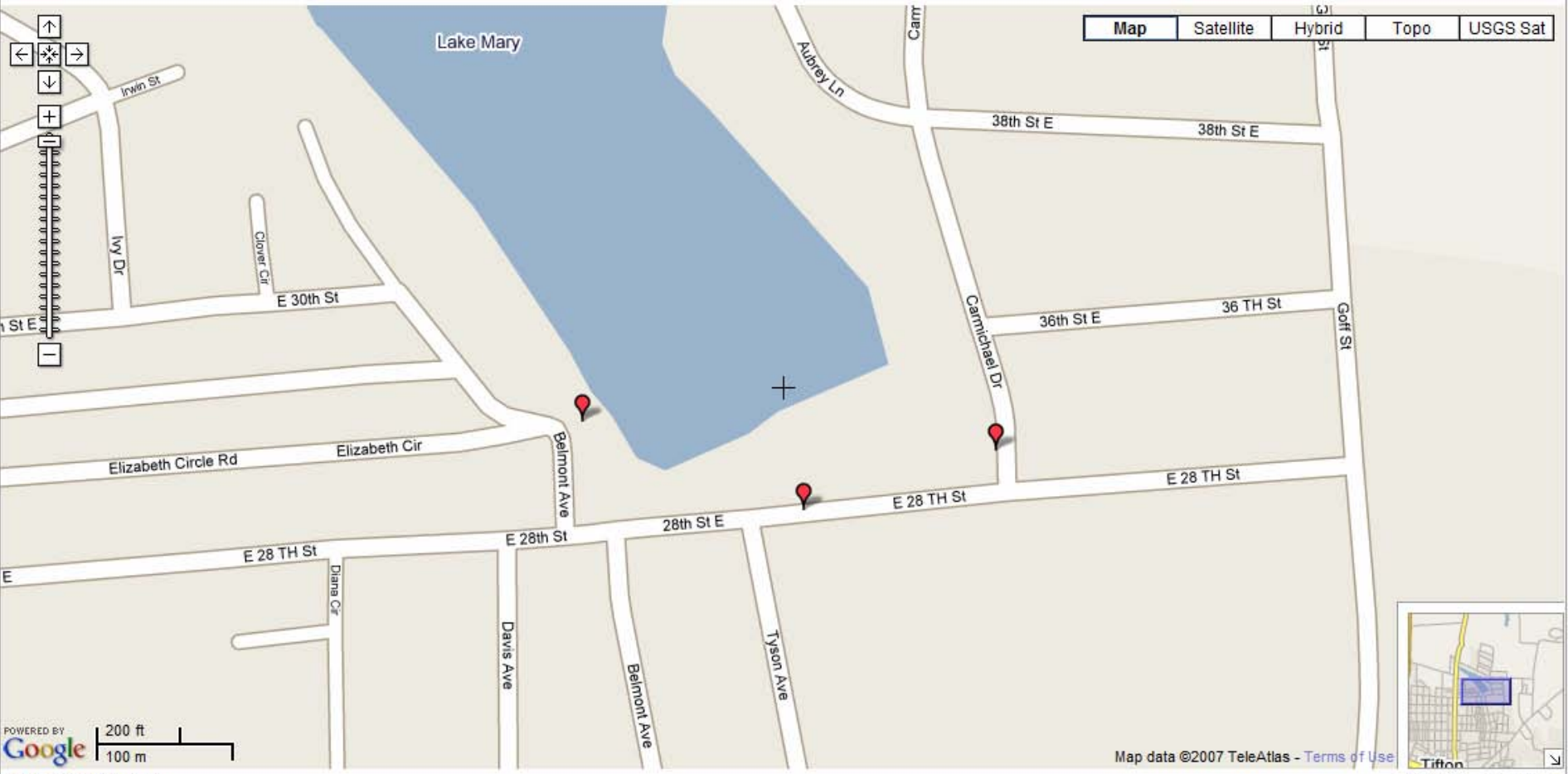
Japanese honeysuckle
Lonicera japonica Thunb.

Point Distribution: Yahoo! Maps

County Distribution: Choose One

SOUTHEAST EXOTIC PEST PLANT COUNCIL SE-EPPC

EDD MapS
Early Detection & Distribution Mapping System



click and drag map

drag to re-size map

Southeast EPPC - Early Detection and Distribution Mapping System - Windows Internet Explorer

http://www.se-eppc.org/eddMapS/google/index.cfm?sub=3039&lat=31.37686&long=-83.44983&zoom=14

Google

SnagIt

iGoogle | Southeast EPPC - Early ...

Page | Tools

Japanese honeysuckle
Lonicera japonica Thunb.

Point Distribution: Yahoo! Maps

County Distribution: Choose One

SOUTHEAST EXOTIC PEST PLANT COUNCIL SE-EPPC

EDD MapS
Early Detection & Distribution Mapping System

click and drag map

drag to re-size map

Southeast EPPC - Early Detection and Distribution Mapping System - Windows Internet Explorer

http://www.se-eppc.org/eddMapS/google/index.cfm?sub=3039&lat=31.37686&long=-83.44983&zoom=14

SnagIt

iGoogle | Southeast EPPC - Early ...

Page | Tools

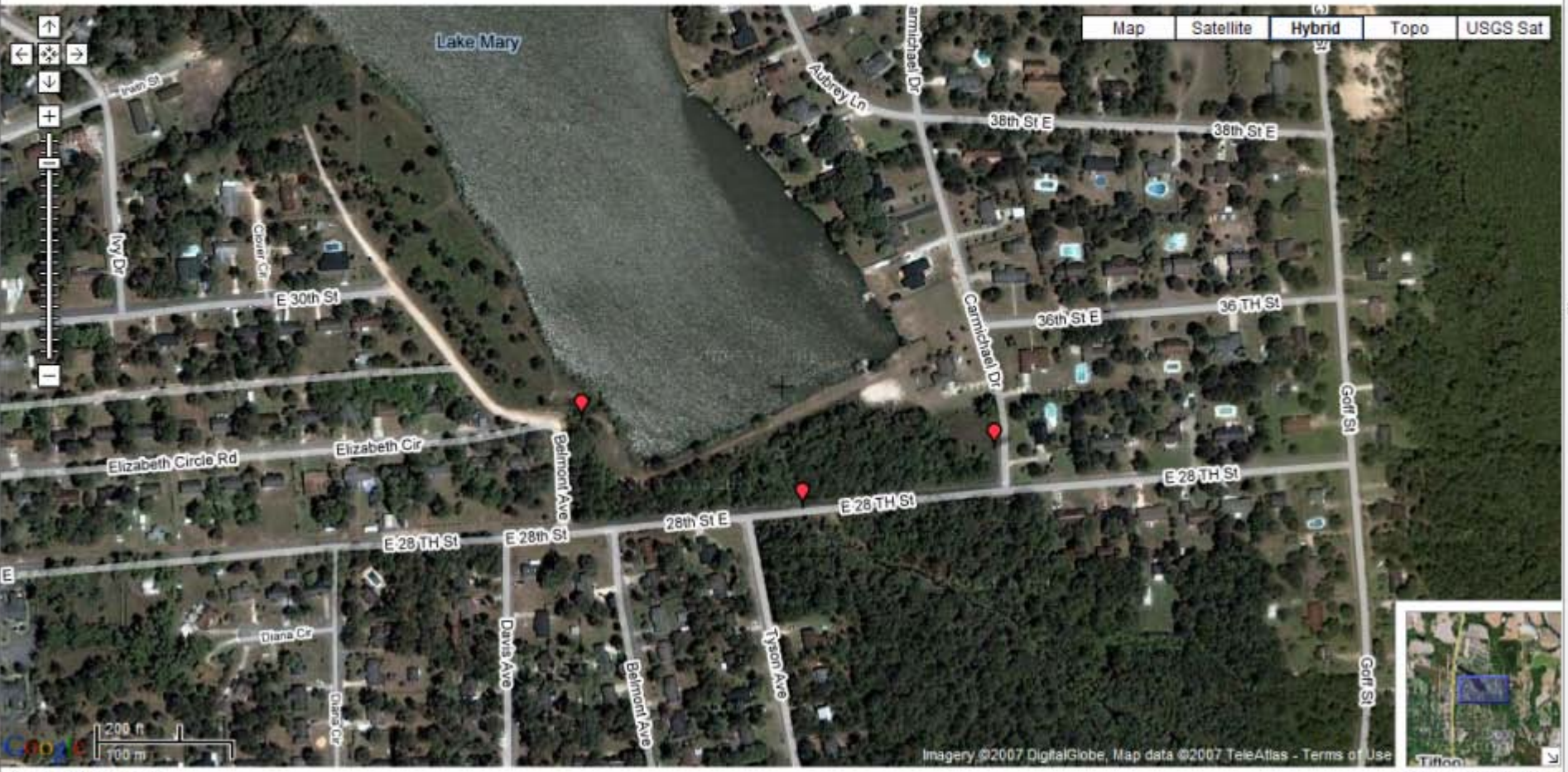
Japanese honeysuckle
Lonicera japonica Thunb.

Point Distribution: Yahoo! Maps

County Distribution: Choose One

SOUTHEAST EXOTIC PEST PLANT COUNCIL — SE-EPPC

EDD MapS
Early Detection & Distribution Mapping System



click and drag map

drag to re-size map

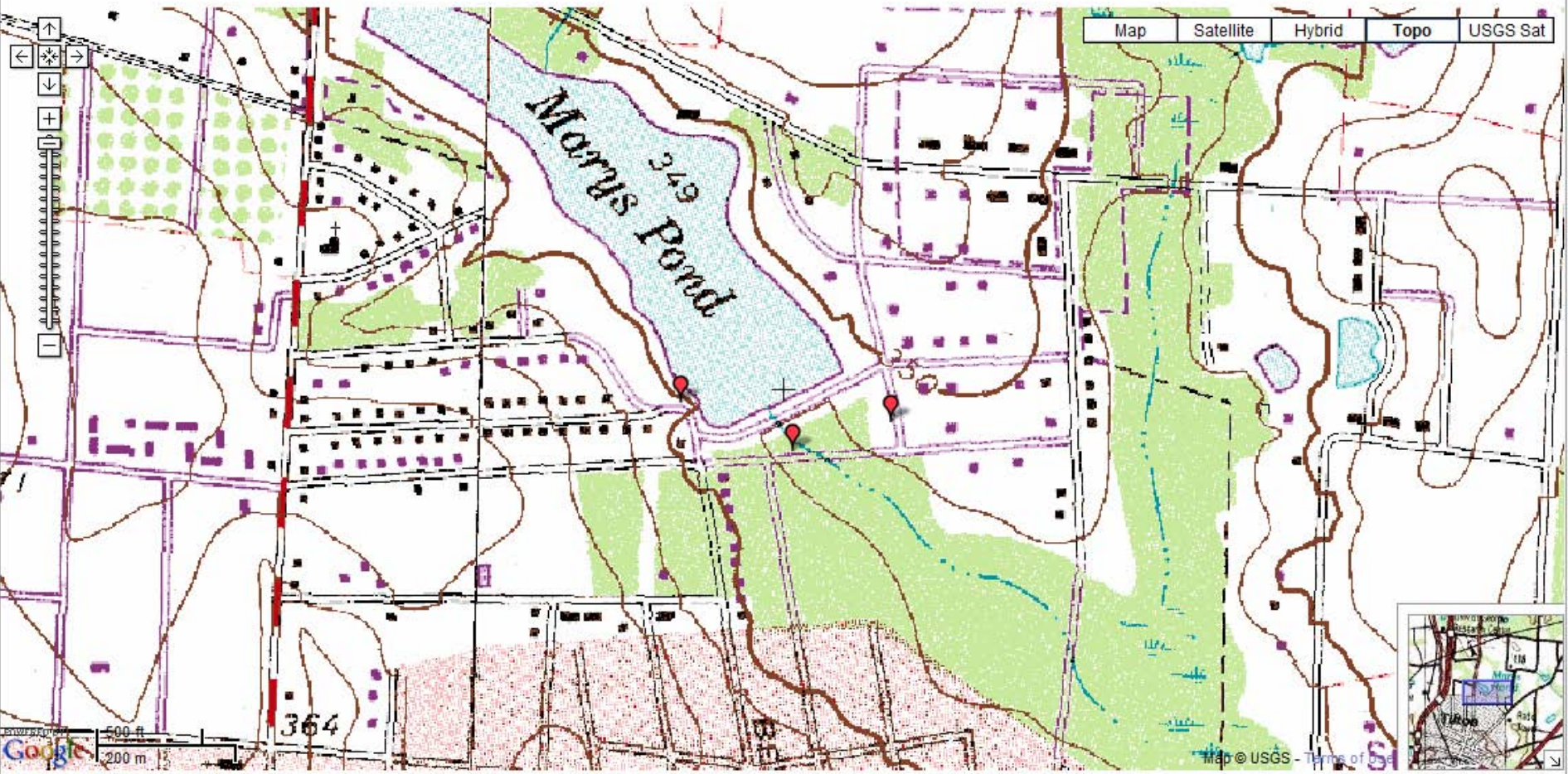
Japanese honeysuckle
Lonicera japonica Thunb.

Point Distribution: Yahoo! Maps

County Distribution: Choose One

SE-EPPC Exotic Pest Plant Council

EDD MapS
Early Detection & Distribution Mapping System



click and drag map

drag to re-size map

Latitude: 31.481096344426497 Longitude: -83.49522471427917

Dactyloctenium radulans
(button grass)

USGS


Early Detection | IPANE Species | Data & Maps | Volunteers | About the Project | Related Information
Invasive Plant Atlas of New England
IPANE
The Invasive Plant Atlas of New England's (IPANE) mission is to create a comprehensive web-accessible database of invasive and potentially invasive plants in New England that will be continually updated by a network of professionals and trained volunteers. The database will facilitate education and research that will lead to a greater understanding of invasive plant ecology and support informed conservation management. An important focus of the project is the early detection of, and rapid response to, new invasions.
:: Invasive plant management ::
:: Calendar of Events ::
:: Early Detection
:: IPANE Species
:: Data & Maps
CSREES
New England Wild Flower Society
University of Connecticut
CIESIN Columbia University
USGS
::Site Map
::Contact Us
::Report a Sighting
Citation Information:
Mehrhoff, L. J., J. A. Silander, Jr., S. A. Leicht, E. S. Mosher and N. M. Tabak. 2003.
IPANE: Invasive Plant Atlas of New England. Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs, CT, USA.
URL: http://www.ipane.org

USGS


Home | Early Detection | IPANE Species | Data & Maps | Volunteers | About the Project | Related Information
IPANE
Invasive Plant Atlas of New England
Early Detection
:: Species List (Scientific Names)
:: Species List (Common Names)
:: Table by States and Life Forms
:: Report a Sighting
:: Invasive Alerts
Use this form to alert us to sightings of invasive species and activate our early detection network, or to ask questions of our experts. This is a communication tool: reports are not entered into our database from this form (a complete field form is necessary for inclusion in the database). Please attach digital photographs if possible.
We require your name, a note to our staff, and an email address or a phone number
** indicates a required field
Your name **
Your E-mail
Your phone
(** either email or phone is required; both may be included)
Do you want to send a CC of this message to yourself
Yes
No
Your note to our staff **
We can also accept pictures as further documentation. They must be either a gif, jpeg, or png (*.gif, *.jpg, *.png) and less than 3 MB each in size. Remember, the larger the file the longer it will take to transfer to our server.
File 1
Browse...
File 2
Browse...
File 3
Browse...
Send the message
Reset

USGS